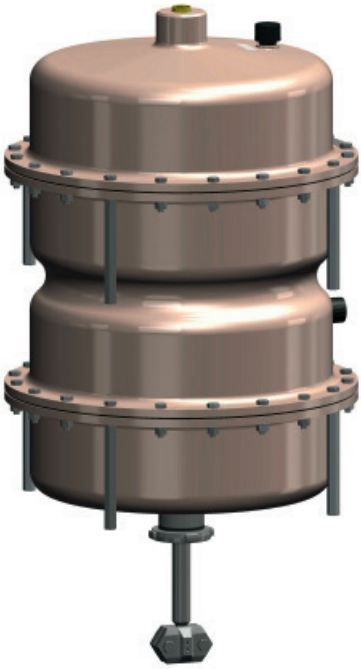
Type 3271 Pneumatic Actuator

Actuator areas: 1400-120 cm² · 2800 cm² · 2 x 2800 cm²

Type 3271, 2800 cm²



Type 3271, 2 x 2800 cm²
(tandem actuator)

Translation of original instructions

Mounting and Operating Instructions

EB 8310-7 EN

Edition June 2015

Note on these mounting and operating instructions

These mounting and operating instructions (EB) assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices.

➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.

➔ If you have any questions about these instructions, contact SAMSON's After-sales Service department (aftersalesservice@samson.de).

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

– Mounting and operating instructions for mounted valve

– Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.)

– ▶ WA 0029 for tools and lubricant

The mounting and operating instructions for all supplied devices are included in the delivery. The latest versions of the documents are available on our website at ▶ www.samson.de > Product documentation.

Definition of signal words

DANGER!
Hazardous situations which, if not avoided, will result in death or serious injury

WARNING!
Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE
Property damage message or malfunction

Note:
Additional information

Tip:
Recommended action

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1 Safety instructions and safety measures

Intended use

The SAMSON Type 3271 Actuator is designed for operating a mounted globe valve. In combination with the valve, the actuator is used to shut off the flow of liquids, gases or vapors in the pipeline. Depending on the version, the actuator is suitable for throttling or on/off service. The actuator can be used in processing and industrial plants.

The actuator is designed to operate under exactly defined conditions (e.g. thrust, travel). Therefore, operators must ensure that the actuator is only used in applications that meet the specifications used for sizing the actuator at the ordering stage. In case operators intend to use the actuator in other applications or conditions than specified, SAMSON must be contacted.

SAMSON does not assume any liability for damage resulting from the failure to use the valve for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data and nameplate for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The actuator is not suitable for the following applications:

– Use outside the limits defined during sizing and in the technical data
– Use outside the limits defined by the accessories mounted on the actuator

Furthermore, the following activities do not comply with the intended use:

– Use of non-original spare parts
– Performing service and repair work not described in these instructions

Qualifications of operating personnel

The actuator must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

We recommend wearing the following personal protective equipment when handling the Type 3271 Pneumatic Actuator:

– Protective gloves when mounting or removing the actuator

Note:
More information on the safe handling of the diaphragms installed in the pneumatic actuators is available in ▶ http://www.samson.de/reach-en.html.

➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications to the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the control valve may no longer meet the requirements for its intended use.

Safety devices

The Type 3271 Actuator does not have any special safety equipment.

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the actuator by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. They must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up and maintenance.

Responsibilities of the operator

The operator is responsible for proper operation and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third persons are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the specified hazard statements, warning and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards and regulations

According to the ignition risk assessment performed in accordance with EN 13463-1:2009, section 5.2, the non-electrical actuators do not have their own potential ignition source even in the rare incident of an operating fault. As a result, they do not fall within the scope of Directive 94/9/EC.

➔ For connection to the equipotential bonding system, observe the requirements specified in section 6.3 of EN 60079-14:2014-10 (VDE 0165 Part 1).

1.1 Notes on possible severe personal injury

DANGER!

Risk of bursting in the actuator.

Actuators are pressurized. Improper opening can lead to actuator components bursting.

➔ Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

1.2 Notes on possible personal injury

WARNING!

Crush hazard arising from moving parts.

The actuator contains moving parts (actuator stem), which can injure hands or fingers if inserted into the actuator.

➔ Do not insert hands or finger into the yoke while the valve is in operation.

➔ While working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by four long bolts protruding from the bottom of the actuator.

➔ Before starting any work on the actuator, relieve the compression from the preloaded springs (see section 9.2).

1.3 Notes on possible property damage

NOTICE

Risk of damage to the actuator due to incorrectly attached lifting equipment.

The lifting eyelet on the top diaphragm case is intended for mounting and removing the actuator as well as lifting the actuator without valve.

➔ Do not lift the entire control valve assembly using the lifting eyelet of the actuator.

➔ Do not attach load-bearing lifting equipment to the actuator, handwheel or any other parts.

Risk of actuator damage due to excessively high or low tightening torques.

Observe the specified torques on tightening actuator components. Excessively tightened torques lead to parts wearing out quicker. Parts that are not tightened far enough may loosen.

➔ Observe the specified tightening torques (▶ WA 0029).

Risk of actuator damage due to the use of unsuitable tools.

Certain tools are require to work on the actuator.

➔ Only use tools approved by SAMSON (▶ WA 0029).

Risk of actuator damage due to the use of unsuitable lubricants.

The lubricants to be used depend on the actuator material. Unsuitable lubricants may corrode and damage the actuator surface.

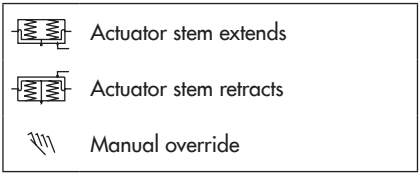
➔ Only use lubricants approved by SAMSON (▶ WA 0029).

2 Markings on the actuator

2.1 Actuator nameplate

The nameplate is stuck on the diaphragm casing. It includes all details required to identify the actuator:

- Manufacturer and type number
- Configuration ID (Var.-ID) as bar code and plain text
- Serial no.
- Country of origin
- Actuator area in cm²
- Diaphragm material: NBR or PVMQ
- Symbol indicating fail-safe action: stem extends or retracts:



- Bench range in bar or psi
- Operating travel in mm
- Bench range with preloaded springs
- Thread for pneumatic connection in G, NPT or Rc
- Permissible supply pressure p_{max}

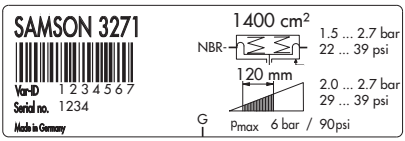


Fig. 1: *Example for nameplate*

3 Design and principle of operation

The Type 3271 Pneumatic Actuators with 1400-120 cm², 2800 cm² or 2x 2800 cm² actuator area contain a rolling diaphragm (A4) and internal springs (A10). They are mounted on SAMSON Series 240, 250, 280 and 290 Valves.

The signal pressure p_{st} creates the force F = p_{st} x A at the diaphragm surface A which is opposed by the springs (A10) in the actuator. The bench range is determined by the number of springs used and their compression, taking into account the rated travel. The travel is proportional to the signal pressure p_{st}. The direction of action of the actuator stem (A7) depends on how the springs are installed in the actuator.

The stem connector clamps (A26) connect the actuator stem (A7) with the plug stem of the valve.

Actuators with 1400-120 cm² actuator area are fitted with an anti-rotation fixture (A88).

The tandem actuator contains two coupled diaphragms (A4). The single pressure produces a thrust at the two diaphragms that is twice as high as the thrust of a single actuator.

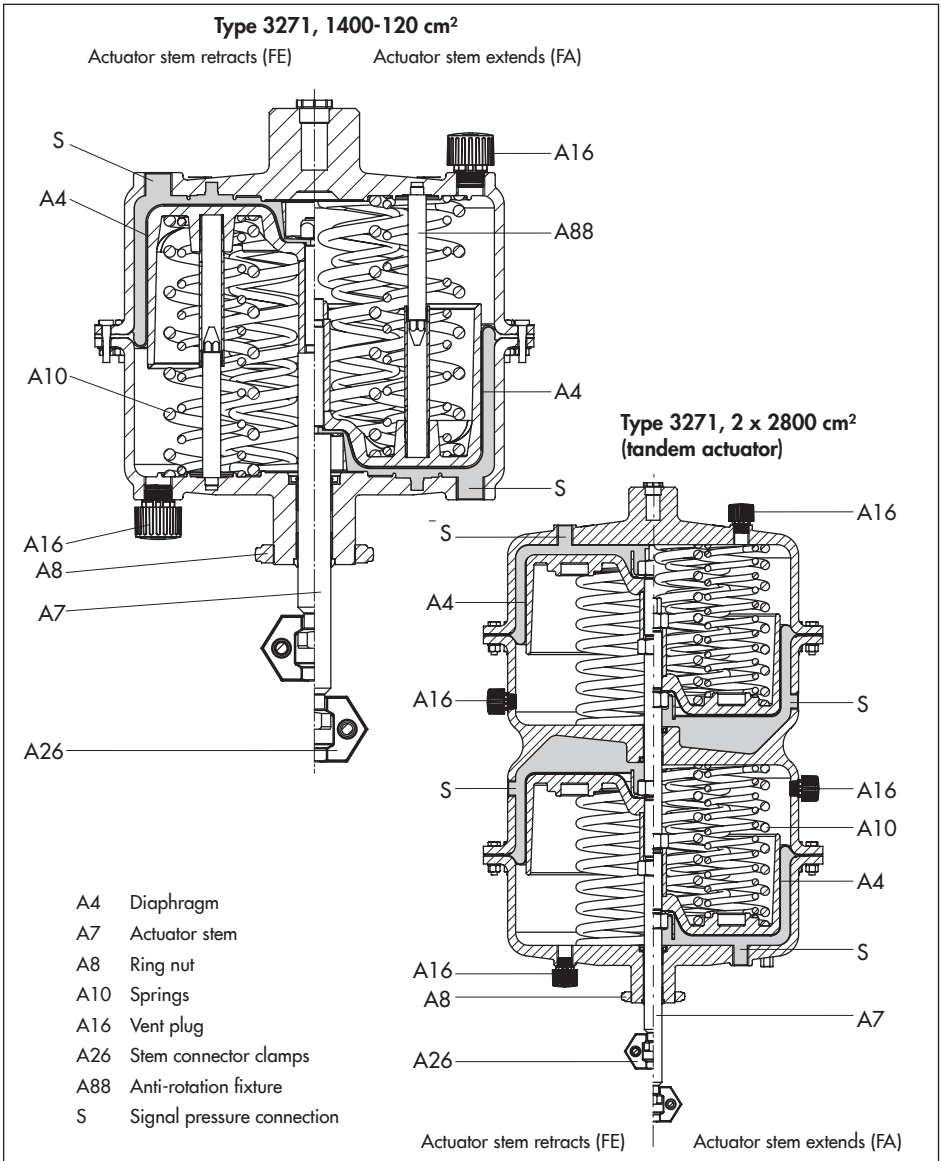


Fig. 2: *Functional drawing*

3.1 Direction of action

The direction of action is determined by how the springs and diaphragm plate are arranged in the actuator. With "actuator stem retracts" action, the compressed air is applied to the loading pressure connection on the top diaphragm case. With "actuator stem extends" action, the compressed air is applied to the loading pressure connection on the bottom diaphragm case.

The actuator's direction of action can be reversed (see section 6.3).

3.2 Signal pressure routing

1400-120 cm² and 2800 cm²

In the "actuator stem extends" version, the signal pressure is routed through the bottom loading pressure connection (S) to the bottom diaphragm chamber and moves the actuator stem (A7) upward opposing the spring force.

In the "actuator stem retracts" version, the signal pressure is routed through the top loading pressure connection (S) to the top diaphragm chamber and moves the actuator stem (A7) downward opposing the spring force.

2 x 2800 cm² (tandem actuator)

In the "actuator stem extends" version, the signal pressure is routed through both bottom loading pressure connections (S) to the bottom diaphragm chamber and moves the actuator stem (A7) upward opposing the spring force.

In the "actuator stem retracts" version, the signal pressure is routed through both top loading pressure connections (S) to the top diaphragm chamber and moves the actuator stem (A7) downward opposing the spring force.

3.3 Fail-safe action

When the signal pressure is reduced or the control signal fails, the fail-safe action of the actuator depends on whether the springs are installed in the top or bottom diaphragm chamber.

3.3.1 Version with fail-safe action "actuator stem extends" (FA)

When the signal pressure is reduced or the control signal fails, the springs move the actuator stem downward and close the globe valve.

The valve opens when the signal pressure is increased enough to overcome the spring force.

3.3.2 Version with fail-safe action "actuator stem retracts" (FE)

When the signal pressure is reduced or the control signal fails, the springs move the actuator stem upward and open a mounted globe valve.

The valve closes when the signal pressure is increased enough to overcome the spring force.

3.4 Versions

- Type 3271 as single actuator with 1400-120 cm² actuator area
- Type 3271 as single actuator with 2800 cm² actuator area
- Tandem actuator (2 x 2800 cm²)

The Type 3271 Pneumatic Actuator can be fitted with a mechanically adjustable travel stop. The travel is reduced by up to 50 % in both directions of action (stem extends or retracts).

3.5 Technical data

The nameplate provide information on the actuator version (see section 2.1).

Note:
More information is available in Data Sheet ▶ T 8310-2.

Compliance

The Type 3271 Pneumatic Actuator bears the EAC mark of conformity.

Temperature range

The permissible temperature range depends on the diaphragm material:

Diaphragm material	Temperature range
NBR [1]	–35 to +90 °C –31 to +194 °F
PVMQ	–60 to +90 °C –76 to +194 °F

[1] In on/off service, lowest temperature restricted to –20 °C (–4 °F).

Supply pressure

The maximum permissible supply pressure is 6 bar in throttling service. See section 6.2 for restrictions in on/off service.

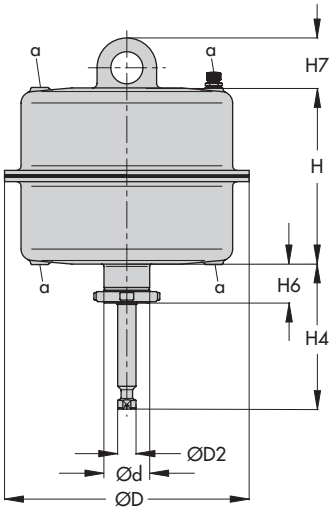
Table 1: *Dimensions in mm and weights in kg*

Actuator	**Type**	**3271**		
Actuator area	**cm²**	**1400-120**	**2800**	**2 x 2800**
Height	H	380	520	1020
	$H4_{rated}FA$	285	315	
	$H4_{max}FA$	288	325	
	$H4_{max}FE$	315	355	
	H6	85	85	
	H7	110	110	
Travel limit	H8 [1]	500	500	
Diameter	ØD	534	770	
	ØD2	40	40	
Ød (thread)		M100 x 2	M100 x 2	
Air connection	a	G 1/1 NPT	G 1/1 NPT	
Weight				
Without handwheel		175	450	950

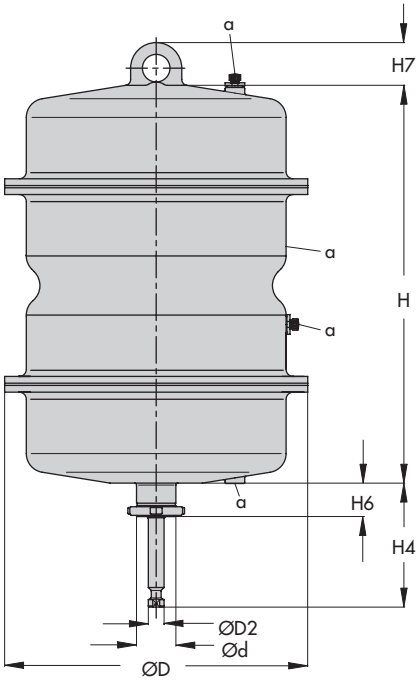
FA = Stem extends

FE = Stem retracts

Dimensional drawings



Type 3271 with 1400-120 and 2800 cm² actuator areas



Type 3271 as tandem actuator with 2 x 2800 cm² actuator areas

4 Preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received against the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.1 Unpacking

Note:
Do not remove the packaging until immediately before mounting.

Proceed as follows to lift and mount the actuator:

1. Remove the packaging from the actuator.
2. Dispose of the packaging in accordance with the valid regulations.

4.2 Transporting and lifting

DANGER!
Hazard due to suspended loads falling.
Stay clear of suspended or moving loads.

WARNING!
Risk of lifting equipment tipping and risk of damage to lifting accessories due to exceeding the rated lifting capacity.
– Only use approved lifting equipment and accessories whose minimum lifting capacity is higher than the weight of the actuator.
– Refer to section 3.5 for weights.

NOTICE
Risk of actuator damage due to incorrectly attached slings.
The lifting eyelet on the top diaphragm case is intended for mounting and removing the actuator as well as lifting the actuator without valve.
– Do not lift the entire control valve assembly using the lifting eyelet of the actuator.
– Do not attach load-bearing slings to the actuator, handwheel or any other parts.
– Observe lifting instructions (see section 4.2.2).

Tip:
SAMSON's After-sales Service department can provide more detailed transport and lifting instructions on request.

4.2.1 Transporting

The actuator can be transported using lifting equipment (e.g. crane or forklift).

➔ Leave the actuator in its transport container or on the pallet to transport it.

➔ Observe the transport instructions.

Transport instructions

– Protect the actuator against external influences (e.g. impact).
– Do not damage the corrosion protection (paint, surface coatings). Remove any damage immediately.
– Protect the actuator against moisture and dirt.
– The permissible transportation temperature of standard control valves is –20 to +65 °C.

Note:
Contact SAMSON's After-sales Service department for the transportation temperatures of other valve versions.

4.2.2 Lifting

To mount a large actuator, use lifting equipment (e.g. crane or forklift) to lift it.

Lifting instructions

– Secure slings against slipping.
– Make sure the slings can be removed from the actuator once it has been mounted onto the valve.
– Prevent the actuator from tilting or tipping.
– Do not leave loads suspended when interrupting work for longer periods of time.
– Make sure that the additional sling between the actuator eyelet and rigging equipment (hook, shackle etc.) does not bear any load when lifting control valves larger than DN 150 with the actuator already mounted. The sling only protects the control valve from tilting while being lifted. Before lifting the control valve, tighten the sling. The slings attached to the valve body must bear the entire load (see Fig. 4).

Lifting an actuator (without valve)

> ***NOTICE***
> *Risk of actuator damage due to incorrectly attached slings.*
> *The lifting eyelet on the top diaphragm case is intended for mounting and removing the actuator as well as lifting the actuator without valve. Do not lift the entire control valve assembly using the lifting eyelet of the actuator.*

1. Attach a sling to the lifting eyelet of the actuator and to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 3).
2. Carefully lift the actuator. Check whether the lifting equipment and accessories can bear the weight.
3. Move the actuator at an even pace to the mounting site.
4. Mount the actuator to the valve. See section 5.1.
5. Remove slings after mounting.

> ***Tip:***
> *We recommend using a hook with safety latch (see Fig. 3). The safety latch prevents the slings from slipping during lifting and transporting.*

Lifting the entire control valve assembly

See associated valve documentation.

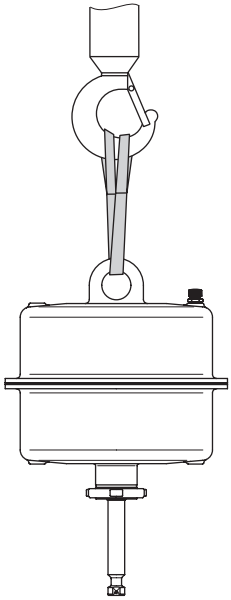


Fig. 3: *Lifting point on the actuator*

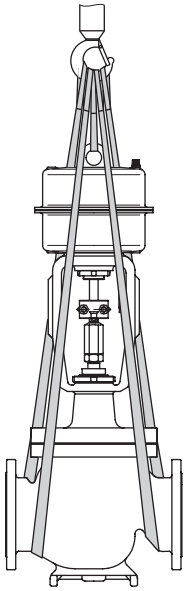


Fig. 4: *Lifting points on the control valve (example)*

4.3 Storage

NOTICE

Risk of actuator damage due to improper storage.

– Observe storage instructions.
– Avoid long storage times.
– Contact SAMSON in case of different storage conditions or longer storage times.

Note:

We recommend regularly checking the actuator and the prevailing storage conditions during long storage times.

Storage instructions

– When the valve and actuator are already assembled, observe the storage conditions for control valves. See associated valve documentation.
– Protect the actuator against external influences (e.g. impact).
– Do not damage the corrosion protection (paint, surface coatings). Remove any damage immediately.
– Protect the actuator against moisture and dirt. Store it at a relative humidity of less than 75 %. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
– Make sure that the ambient air is free of acids or other corrosive media.
– The permissible storage temperature of standard control valves is –20 to +65 °C.

Note:

Contact SAMSON's After-sales Service department for the storage temperatures of other valve versions.

– Do not place any objects on the actuator.
– Pack the actuator in airtight packaging.

Special storage instructions for soft parts

Soft parts, e.g. actuator diaphragm

– To protect soft parts against UV light and ozone, pack them in black plastic bags. We recommend using polyethylene packaging with a minimum thickness of 0.075 mm. Do not use PVC.
– To keep soft parts in shape and to prevent cracking, do not bend them or hang them up.
– We recommend a storage temperature of 15 °C for soft parts.
– Store soft parts away from lubricants, chemicals, solutions and fuels.

Tip:

SAMSON's After-sales Service department can provide more detailed storage instructions on request.

4.4 Preparation for installation

Proceed as follows:

➔ Check the actuator for damage.

➔ Check to make sure that the type designation, material and temperature range of the actuator match the plant conditions.

➔ Check the pressure gauge installed on valve accessories to make sure it functions.

➔ When the valve and actuator are already assembled, check the tightening torques of the bolted joints (▶ WA 0029). Components may loosen during transport.

5 Mounting and start-up

SAMSON control valves are delivered ready for use. In special cases, the valve and actuator are delivered separately and must be assembled on site. The procedure to mount and start up the actuator are described in following.

NOTICE
Risk of actuator damage due to excessively high or low tightening torques.
Observe the specified torques on tightening actuator components. Excessively tightened torques lead to parts wearing out quicker. Parts that are not tightened far enough may loosen.
Observe the specified tightening torques (▶ WA 0029).

NOTICE
Risk of actuator damage due to the use of unsuitable tools.
Only use tools approved by SAMSON (▶ WA 0029).

Note:
See associated valve documentation for additional mounting instructions.

5.1 Mounting the actuator onto the valve

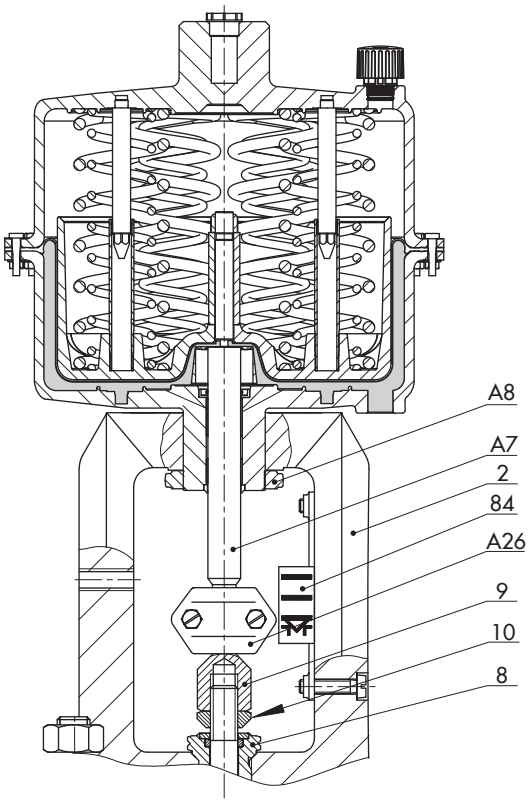
Proceed as follows if the valve and actuator have not been assembled by SAMSON:

Note:
– Remove the mounted actuator before mounting the other actuator (see section 9.2).
– Preloading the actuator springs increases the thrust and reduces the travel range of the actuator (see section 5.2).

Tip:
The valve and actuator are assembled with special attention paid to the actuator's signal pressure range and direction of action. These details are specified on the actuator nameplate (see section 2.1).

1. Undo the lock nut (10) and stem connector nut (9) on the valve.
2. Press the plug together with the plug stem firmly into the seat ring.
3. Thread down the lock nut and stem connector nut.
4. Remove the clamps of the stem connector (A26) and the ring nut (A8) from the actuator.
5. Slide the ring nut over the plug stem.
6. Place the actuator onto the valve bonnet (2) and secure it with the ring nut.
7. Determine the lower and upper signal pressure range values:

   The lower signal pressure range value is the same as the minimum value of the bench range or operating range (with preloaded springs).



2	Bonnet/flange
8	Threaded bushing
9	Stem connector nut
10	Lock nut
84	Travel indicator scale
A7	Actuator stem
A8	Ring nut
A26	Stem connector clamps

Fig. 5: *Type 3271 Pneumatic Actuator*

The upper signal pressure range value is the same as the maximum value of the bench range or operating range (with preloaded springs).

For actuator springs that are to be preloaded subsequently, determine the upper and lower signal pressure range as described in section 5.2.

8. Depending on the direction of action:

   Actuator stem extends
   Apply a signal pressure that corresponds to the lower signal pressure range value to the connection on the bottom diaphragm chamber.

   Actuator stem retracts
   Apply a signal pressure that corresponds to the upper signal pressure range value to the connection on the top diaphragm chamber.

9. Screw on the stem connector nut (9) by hand until it touches the actuator stem (A7).
10. Turn the stem connector nut a further quarter turn and secure this position with the lock nut (10).
11. Position clamps of the stem connector (A26) and screw them tight.
12. Align the travel indicator (84) with the tip of the stem connector.

5.2 Preloading the springs

By preloading the springs in the actuator, the following can be achieved:

– The thrust is increased (only actuators with "stem extends")
– In combination with a SAMSON valve: the actuator travel range can be adapted to a smaller valve travel range

Note:
Actuators that have already been preloaded by SAMSON without mounting the valve are labeled correspondingly.
Additionally, single actuators can be identified by four longer bolts with nuts protruding from the bottom diaphragm case. Tandem actuators additionally have four longer bolts protruding from the intermediate case. They allow the spring compression to be relieved evenly when disassembling the actuator (see section 9.2).

5.2.1 Increasing the actuator thrust

The thrust can only be increased in actuators with "stem extends" action. To achieve this, the springs of the actuators can be preloaded by up to 25 % of their travel or bench range.

Example: Preloading is required for a signal pressure range of 0.2 to 1 bar. 25 % of this span corresponds to 0.2 bar. Therefore, the signal pressure range is shifted by 0.2 bar to 0.4 to 1.2 bar. The new lower signal pressure range value is 0.4 bar and the new upper signal pressure range value 1.2 bar.

➔ Write the new signal pressure range of 0.4 to 1.2 bar on the actuator nameplate as the operating range with preloaded springs.

5.2.2 Adapting the travel range

In some cases, the valve and actuator have different rated travels. Depending on the direction of action, proceed as follows:

Direction of action: actuator stem extends

Always use actuators with preloaded springs when the valve's rated travel is smaller than the rated travel of the actuator.

Example: DN 100 valve with 30 mm rated travel and 1400 cm² actuator with 60 mm rated travel; 0.4 to 2 bar bench range.

The signal pressure for half of the actuator travel (30 mm) is 1.2 bar. Adding it to the lower signal pressure range value of 0.4 bar results in a signal pressure of 1.6 bar required for preloading the springs. The new lower signal range value is 1.6 bar and the new upper signal range value 2.4 bar.

➔ Write the new signal pressure range of 1.6 to 2.4 bar on the actuator nameplate as the operating range with preloaded springs.

Direction of action: actuator stem retracts

The springs of actuators with "stem retracts" action cannot be preloaded. When a SAMSON valve is combined with an oversized actuator (e.g. the rated travel of the actuator is larger than the rated travel of the valve), only the first half of the actuator's bench range can be used.

Example: DN 100 valve with 30 mm rated travel and 1400 cm² actuator with 60 mm rated travel; 0.2 to 1 bar bench range.

At half the valve travel, the operating range is between 0.2 and 0.6 bar.

5.3 Additional fittings

Vent plug

Vent plugs are screwed into the exhaust air ports of pneumatic, electropneumatic and electric devices. They ensure that any exhaust air that forms can be vented to the atmosphere (to avoid excess pressure in the device). Furthermore, the vent plugs allow air intake to prevent a vacuum from forming in the device.

➔ Locate the vent plug on the opposite side to the workplace of operating personnel.

➔ On mounting valve accessories, make sure that they can be operated from the workplace of the operating personnel.

Note:
The workplace of operating personnel is the location from which the valve, actuator and any mounted valve accessories can be accessed to operate them.

6 Operation

6.1 Throttling service

The Type 3271 Pneumatic Actuator with 1400-120 cm², 2800 cm² and 2x 2800 cm² actuator areas is designed for a maximum supply pressure of 6 bar when used for throttling service.

6.2 On/off service

In on/off service, the supply pressure must be limited depending on the bench range or signal pressure range of the actuator. The applicable bench range or signal pressure range which the actuator can move through is written on the nameplate (see section 3.5).

Actuator stem retracts (FE)

For fail-safe action "actuator stem retracts (FE)", the permissible supply pressure must not exceed the upper bench range value by more than 3 bar:

Bench range	Fail-safe action	Max. supply pressure
0.2 to 1.0 bar	Actuator stem retracts	4 bar
0.4 to 2.0 bar		5 bar
0.6 to 3.0 bar		6 bar

Actuator stem extends (FA)

With fail-safe action "actuator stem extends" and travel stop, the supply pressure must not exceed the upper spring range value by more than 1.5 bar.

Additional points that apply concerning operation:

- ➔ Label actuators with reduced supply pressure with a sticker ("Max. supply pressure limited to ... bar").
- ➔ Only apply the signal pressure to the loading pressure connection (S) on the diaphragm chamber of the actuator which does not contain any springs (see Fig. 2).
- ➔ Only use vent plugs that let air through them (16 in Fig. 2).

6.3 Reversal of the direction of action

The direction of action is reversible.

- ➔ If necessary, contact SAMSON's After-sales Service department.

6.4 Travel stop

In the version of Type 3271 with travel stop, the maximum and minimum actuator travel can be limited as follows:

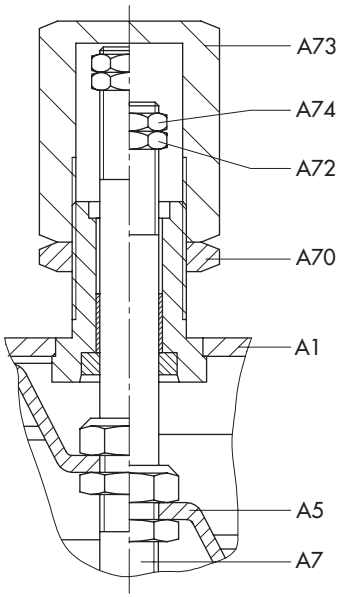
Direction of action	Min. stop	Max. stop
Stem extends (FA)	0 to 125 %	0 to 125 %
Stem retracts (FE)	0 to 100 %	0 to 100 %

6.4.1 Bottom travel stop (minimum travel)

1. Undo lock nut (A70) and remove cover (A73).
2. Unscrew lock nut (A74) and turn the adjustment nut (A72) to adjust the travel stop.
3. Tighten lock nut (A74).
4. Attach the cover (A73) and retighten the lock nut (A70).

6.4.2 Top travel stop (maximum travel)

1. Undo the lock nut (A70).
2. Adjust the cover (A73) to the required travel stop.
3. Retighten lock nut (A70).



Left half: Actuator stem retracts (FE)
Right half: Actuator stem extends (FA)

A1 Top diaphragm case
A5 Diaphragm plate
A7 Actuator stem
A70 Lock nut
A72 Adjustment nut
A73 Cover
A74 Lock nut

Fig. 6: *Travel limit*

7 Maintenance

NOTICE

Risk of actuator damage due to incorrect service or repair.

– Do not perform service and repair work on your own.

– Contact SAMSON's After-sales Service department for service and repair work.

7.1 Preparation for return shipment

Defective actuators can be returned to SAMSON for repair.

Proceed as follows to return valves to SAMSON:

1. Put the control valve out of operation. See associated valve documentation.
2. Remove the actuator from the valve (see section 9.2).
3. Send the actuator to your nearest SAMSON subsidiary. SAMSON subsidiaries are listed on our website at ▶ www.samson.de > Worldwide.

7.2 Ordering spare parts and operating supplies

Contact your nearest SAMSON subsidiary or the SAMSON After-sales Service department for information on spare parts, lubricants and tools.

Spare parts

See section 10.2 for details on spare parts.

Lubricant

Details on suitable lubricants can be found in the document ▶ WA 0029.

Tools

Details on suitable tools can be found in the document ▶ WA 0029.

8 Malfunctions

Depending on the operating conditions, check the actuator at certain intervals to prevent possible failure before it can occur. Operators are responsible for drawing up a test plan.

Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator stem does not move on demand.	Actuator is blocked.	Check attachment. Unblock the actuator.
	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Signal pressure not connected to the correct diaphragm chamber	See section 3.2.
Actuator stem does not move through its complete travel range.	Travel stop active	See section 6.4.
	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Valve accessories incorrectly set	Check the actuator without valve accessories. Check the settings of the valve accessories.

Note:
Contact SAMSON's After-sales Service department for malfunctions not listed in the table.

9 Decommissioning and disassembly

DANGER!
Risk of bursting in the actuator.
Actuators are pressurized. Improper opening can lead to actuator components bursting.
Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

9.1 Decommissioning

To decommission the actuator for maintenance and repair work or disassembly, proceed as follows:

1. Put the control valve out of operation. See associated valve documentation.
2. Disconnect the pneumatic air supply to depressurize the actuator.

9.2 Removing the actuator from the valve

1. Put the control valve out of operation. See associated valve documentation.
2. Undo the clamps of the stem connector (A26).
3. Undo the stem connector nut (9) and lock nut (10).
4. **Removing actuators with "stem extends" action with/without preloaded springs:** to undo the ring nut (A8), apply approx. 50 % signal pressure to open the valve.
5. Unscrew the ring nut on the valve bonnet.
6. Disconnect the signal pressure again.
7. Separate the actuator from the valve by undoing the ring nut.
8. Fasten the lock nut and stem connector nut on the valve.

Relieving the compression of the springs in the actuator

1. Undo the short nuts and bolts on the diaphragm case.
2. Undo the the long bolts evenly in a criss-cross pattern.

9.3 Disposal

➔ Observe local, national and international refuse regulations.

➔ Do not dispose of components, lubricants and hazard substances together with your other household waste.

10 Appendix

10.1 Customer inquiries

Contact SAMSON's After-sales Service department for support concerning service or repair work or when malfunctions or defects arise.

E-mail

You can reach the After-sales Service department at aftersalesservice@samson.de.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on the SAMSON website, in all SAMSON product catalogs or on the back of these Mounting and Operating Instructions.

Required specifications

Please submit the following details:

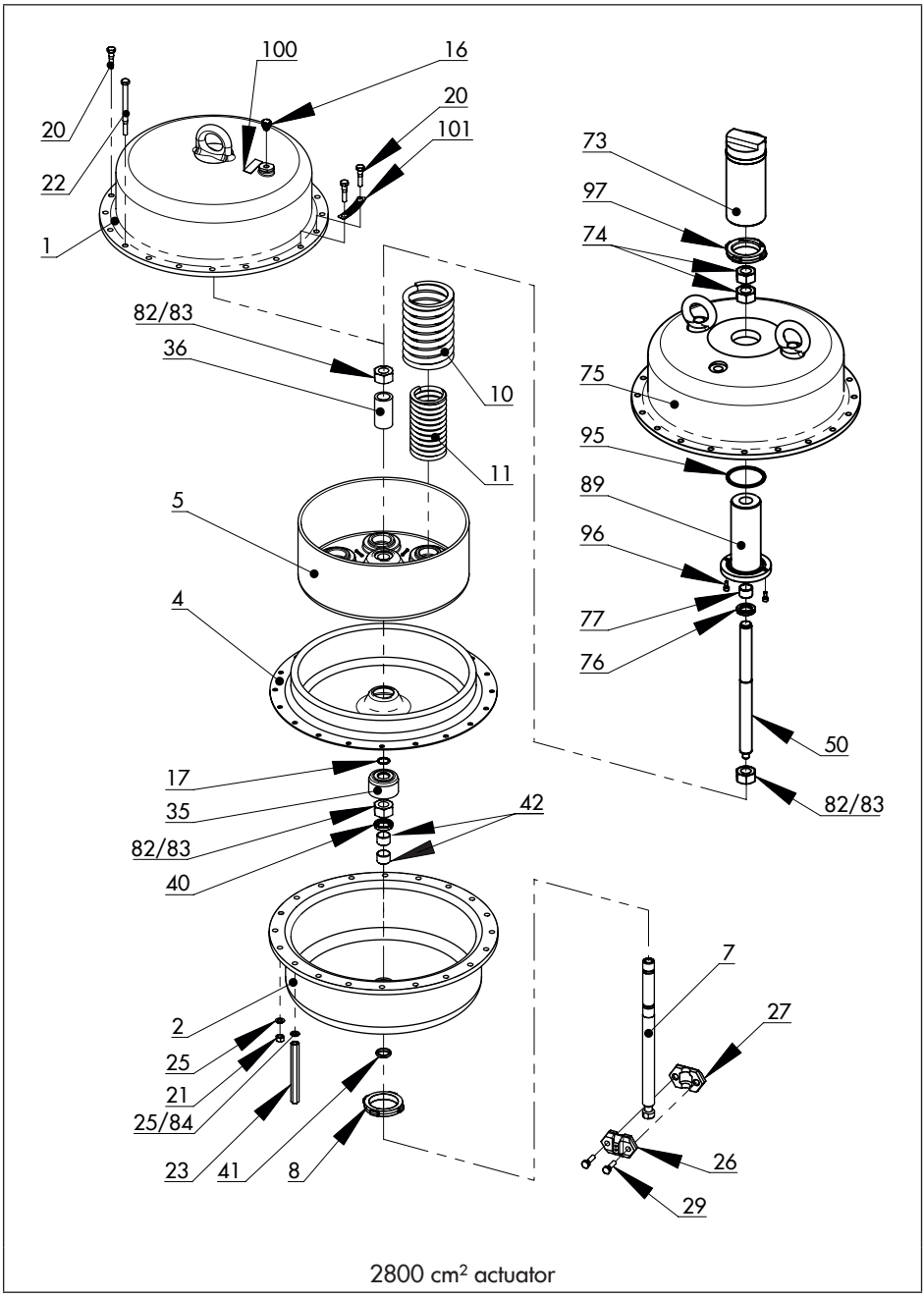
- Order number and position number in the order
- Type, model number, actuator area, travel and bench range (e.g. 0.2 to 1 bar) or the operating range of the actuator
- Type designation of mounted valve.
- Installation drawing

10.2 Spare parts

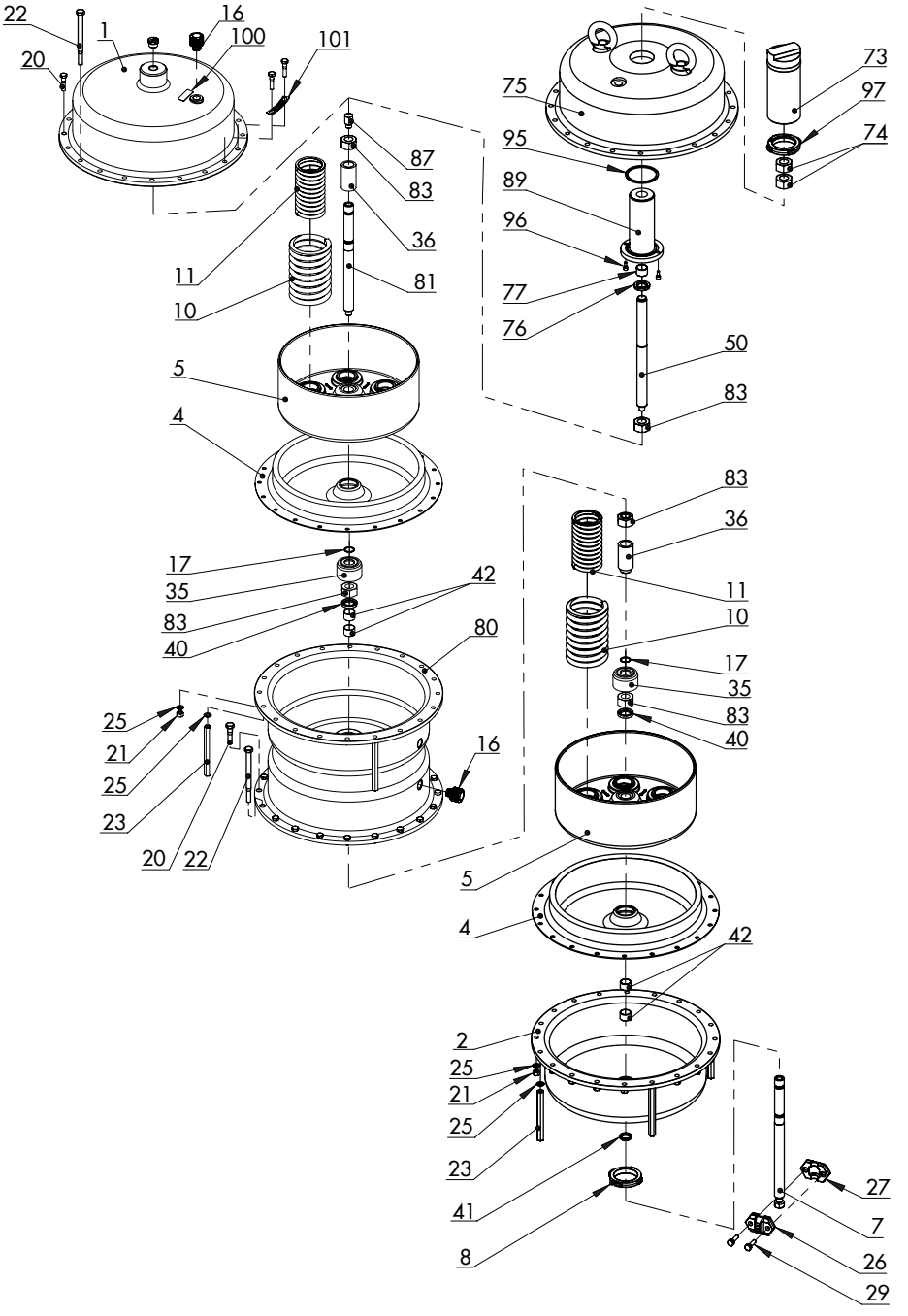
1	Top diaphragm case
2	Bottom diaphragm case
4	Diaphragm
5	Diaphragm plate
7	Actuator stem
8	Ring nut
10	Spring (external)
11	Spring (internal)
16	Vent plug
17	O-ring
20	Hexagon bolt
21	Hexagon nut
22	Hexagon bolt (preloading)
23	Hexagon nut (preloading)
25	Washer
26/27	Stem connector clamps
29	Hexagon screw
35	Compressor
36	Spacer
40	Radial shaft seal
41	Wiper ring
42	Dry bearing
50	Actuator stem
73	Cover
74	Hexagon nut
75	Top diaphragm case
76	Radial shaft seal
77	Dry bearing
80	Diaphragm case (tandem actuator)
81	Actuator stem
82	Hexagon nut [1)]
83	Hexagon nut
84	Washer [1)]
87	Distance piece
89	Bushing
95	O-ring
96	Cap screw
97	Slotted round nut
100	Nameplate
101	Label (preloading)

1) Only for version with 1400-120 cm² actuator area

Note:
An anti-rotation fixture is additionally fitted in actuators with 1400-120 cm² actuator area.



2800 cm² actuator



Tandem actuator (2 x 2800 cm²)

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